

What is claimed is:

1. A piezoelectric oscillator, wherein, in an oscillator including a piezoelectric resonator, an amplifier, and a
5 variable-capacitance element, the variable-capacitance element is a MOS type capacitance element, one terminal of that is applied with an alternating current voltage, whose intermediate voltage is a V-volt voltage, and the other terminal of that is applied with a control voltage falling within a range
10 whose intermediate value is the V-volt voltage.
2. A piezoelectric oscillator, wherein, in an inverter piezoelectric oscillator in which a piezoelectric resonator is connected between an input terminal and an output terminal
15 of an inverter amplifier; and divisional capacitors C1 and C2 are connected between respective ends of the piezoelectric resonator and the ground, by inserting a MOS type capacitance element in series with the piezoelectric resonator, one end of the MOS type capacitance element is applied with a bias voltage
20 which is the V-volt voltage at an output end or input end of the inverter amplifier and the other end thereof has supplied thereto a control voltage that varies within a range whose intermediate value is the V-volt voltage.
- 25 3. A piezoelectric oscillator, wherein, in an inverter piezoelectric oscillator in which a piezoelectric resonator is connected between an input terminal and an output terminal

of an inverter amplifier; and divisional capacitors C1 and C2 are connected between respective ends of the piezoelectric resonator and the ground, two MOS capacitance elements are inserted respectively on both sides of the piezoelectric resonator; one end of each of the MOS capacitance elements is applied with an alternating current voltage, whose intermediate voltage is a V-volt voltage; and the other end thereof is applied with a control voltage that varies within a range whose intermediate value is the V-volt voltage.

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Sub
Fig
(contd)

4. A piezoelectric oscillator, wherein, in an inverter oscillator in which a piezoelectric element is connected to an input or output end of an inverter amplifier; and divisional capacitors C1 and C2 are connected between respective ends of the piezoelectric element and the ground, a MOS capacitance element is inserted between the piezoelectric resonator and an input end of the inverter amplifier or between the piezoelectric resonator and an output end of the inverter amplifier; a control voltage Vcont is applied to the terminal on a connection-to-piezoelectric resonator side of the MOS capacitance element; and, when it is assumed that V represents the voltage that is a direct current bias voltage at the input end or output end of the inverter amplifier and that is applied to one end of the MOS capacitance element, it is arranged that said voltage becomes an intermediate voltage of the control voltage Vcont.

5. A piezoelectric oscillator, wherein, in an inverter
oscillator in which a piezoelectric element is connected to
an input or output end of an inverter amplifier; and divisional
capacitors C1 and C2 are connected between respective ends of
5 the piezoelectric element and the ground, a MOS capacitance
element is inserted between the piezoelectric resonator and
an input end of the inverter amplifier or between the
piezoelectric resonator and an output end of the inverter
amplifier; a control voltage V_{cont} is applied to the terminal
10 on the connection-to-piezoelectric resonator side of the MOS
capacitance element; and a direct current circuit of a resistor
and a capacitor is inserted and connected between the terminal
on the inverter-amplifier side of the MOS capacitance element
and the input or output terminal of the inverter amplifier;
15 and further a direct current bias voltage is applied to the
terminal on the inverter-amplifier side of the MOS capacitance
element.

6. A piezoelectric oscillator according to claim 6, wherein
20 the amplitude level of an alternating current supplied to the
MOS capacitance element is adjusted according to the value of
the resistance of the direct current circuit; and when it is
assumed that V represents the direct current bias voltage
supplied to the terminal on the inverter-amplifier side of the
25 MOS capacitance element, it is arranged that the direct current
bias voltage V becomes an intermediate voltage of the control
voltage V_{cont} .